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Labor Movement and Economic Contribution

: Evidence from Europe

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Abstract

A movement of labor across sectors is the familiar scenario in every country. Labor generally moves from relatively low-paid sector to relatively high-paid sector. The purpose of this study is to estimate the effect of a change in employment in agricultural, industrial, and service sector on economic performance through panel data analysis. The result reveals that only a movement in industrial sector positively contributes to the economy which leads to the integrated policy aimed at improving the condition in manufacturing sector.

JEL classification: J43, J60, O52

Keywords: labor movement; economic growth; panel data

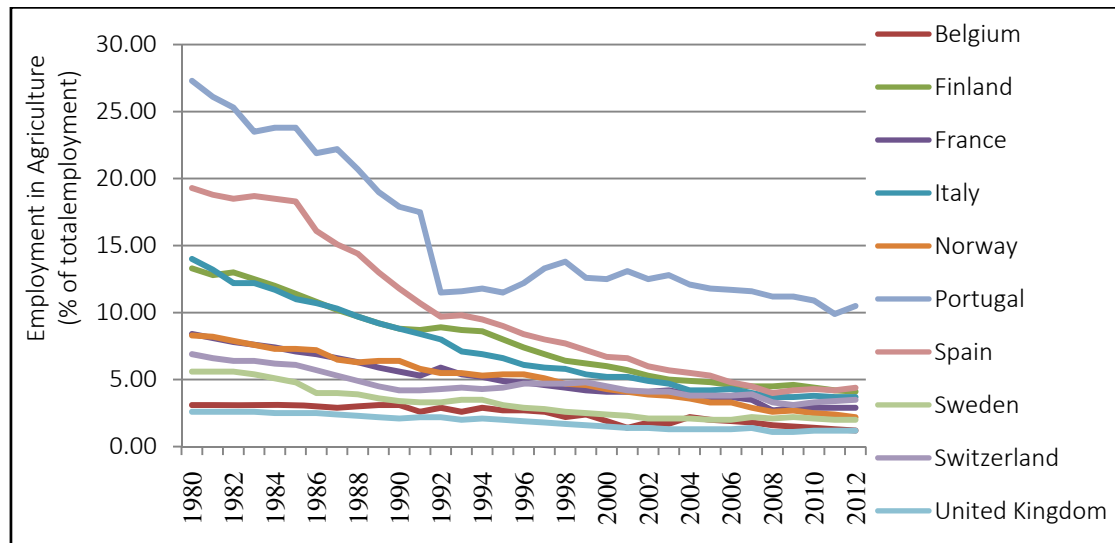
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Introduction

As suggested by Lewis (1954), condition assumed, labors respond their incentive about a higher wage by moving from agricultural sector (lower wage-paid sector) to industrialized sector (higher wage-paid sector). A movement of labor from Lewis's development model is realized to be a motivator of economic growth - defined by an expanding in output. An employment in agricultural sector in 10 countries in Europe from 1980 to 2012 is shown by figure 1.

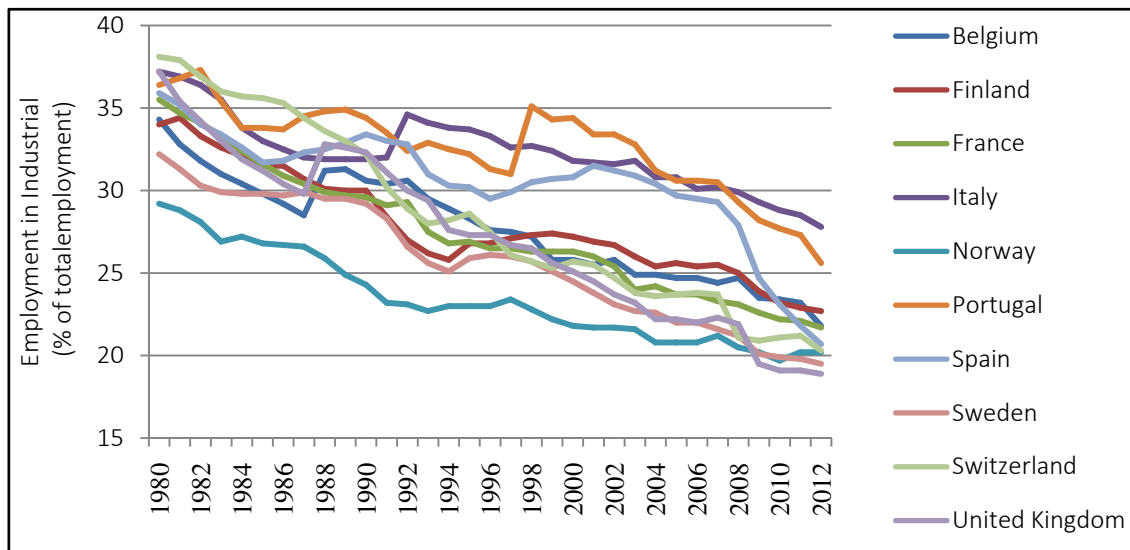
Figure 1: Employment in agricultural sector as a percentage of total employment from 1980 - 2012



Source: World Bank

According to figure 1, it is likely to conclude that labor moved out from agricultural sector for all countries. Share of employment in agricultural sector to total employment declines for many reasons, for example, a relatively lower wage or subsidized economic policy. Agricultural sector in Europe is different from other developing countries due to skilled farmers, high technology, and (more) price stability. Crops (cereals and wheat) and root vegetables (sugar beet and potatoes) are usually cultivated in United Kingdom. Spain is realized to be the planter of oranges, mandarin, grapefruit, and orchard crops (pears, nuts, and apples). Wines and dairy foods (cheese) in France are the two important exported commodity. However, agriculture uses the large area (land) but sometimes its contribution to economy as a whole is very relatively small. Besides agricultural product, almost all of countries in Europe is specialized in manufacturing sector or industrial sector. Technology and innovation are developed for a long time. Labor situation in this sector is shown by figure 2.

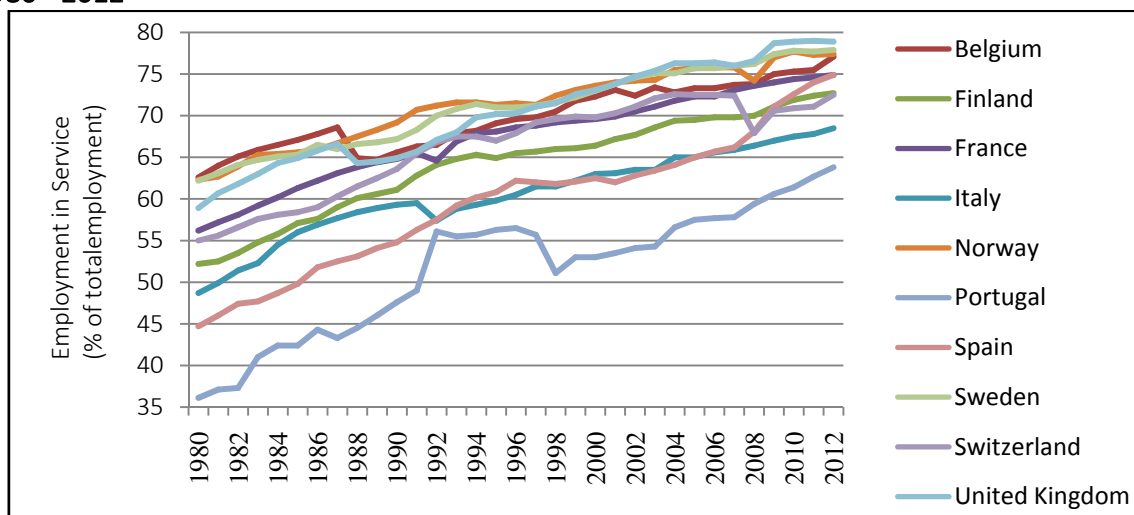
Figure 2: Employment in industrial sector as a percentage of total employment from 1980 - 2012



Source: World Bank

According to figure 2, the movement of labor in industrial sector in many countries is likely to gradually decline. The reason of this scenario may be that manufacturing sector is developed to be more innovative. Machinery or conveyor belt is widespread to produce manufacturing goods which means that labor is no longer necessary compared to the previous day. However, high skilled labor will be still demanded to control the use of engine. From the figure, the trend is not declining all the time. Labor in industrial sector was more hired in Portugal between 1984-1988 and 1997-1998. Also, a dramatic increase in labor employed in this sector was taken place in Spain between 1995-2002. Manufacturing products in Europe are included cars, motors, plastic product, and chemicals. And the last sector in consideration is service sector and it is displayed in figure 3.

Figure 3: Employment in service sector as a percentage of total employment from 1980 - 2012



Source: World Bank

From table 3, it is seemed that labors increasingly worked in service sectors including hotels and catering, transport, restaurants, communications, finance, insurance, home service, postal services. The dominant sub-sector in Finland is health and social services while it is private service sector in Sweden. However, the prerequisite of service economy is

improved human capital. A labor who would like to work in this sector should be educated (at least literate) and healthy. Thus, the service country requires human development.

Thus, it is easy to consider the trend of employment in each sector. However, the question is about how it affect to the economy. For the trend, roughly observed, an employment in agricultural sector and industrial sector are declining while increasing in service sector. Koo & Lou (1997) argued that a growth in agricultural sector is dependent on industrial expansion while a growth in industrial sector cannot be explained by a agricultural sector. It is correspondent to the work of Subramaniam & Reed (2009) which found that industrial sector yields the positive effect to agricultural sector in Poland while industrial sector is not a good factor to agricultural sector in Romania. For the contribution to economy, Fan, Zhang & Robinson (2003) revealed that structural change from low productivity to high productivity sector promises a positive return to Chinese economy. Also, Wilfrid & Edwige (2004) concluded that there is a positive contribution of agriculture to economic performance in China, Congo, and Burkina Faso but a negative effect for Cameroon.

Additionally, Linden & Mahmood (2007) studied economic structure in Schengen countries and they found that industry is an stimulator of economic growth. Moreover, Raza, Ali & Mehmood (2012) argued that agricultural output is positively related to Pakistan's Gross Domestic Product (GDP). Also, Hussin & Yik (2012) found that the highest contribution to Chinese economy is stemmed from manufacturing sector while it is service sector in India. Thus, for 10 selected countries in Europe, the research question is how labor movement among three sectors (Agriculture, Industry, and Service) affect to economy.

Objectives

- To investigate the effect of labor movement among economic sectors on economic performance
- To guide the policy on labor market

Methodology and Model Specification

The panel data is collected from the World Bank database including a share of employment in agricultural, industrial, and service sector to total employment and Gross National Income per capita (PPP) for each countries. There are ten countries in Europe including Belgium, Finland, France, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. The time range is 1980 to 2012.

Due to panel data, the econometric analysis started from stationary (unitroot) test. The appropriate treatment of data is implemented to avoid the problem of spurious regression. Next, the most appropriate model among Fixed Effect (FE), Random Effect (RE), and Pooled OLS is used through Hausman Test and Breusch-Pagan LM test.

There are three mathematic expression in explaining our interested research problem as written,

$$Gnipc = \alpha + \beta Ema \quad (1)$$

denotes that Gnipc is per capita GNI, Ema is the log of share of employment in agricultural sector to total employment, and β is marginal effect reflecting the response of gni to a change in employment in agricultural sector.

$$Gnipc = \alpha + \delta Emi \quad (2)$$

denotes that Gnipc is per capita GNI, Emi is the log of share of employment in industrial sector to total employment, and δ is marginal effect reflecting the response of gni to a change in employment in industrial sector.

$$Gnipc = \alpha + \varphi Ems \quad (3)$$

denotes that Gnipc is per capita GNI, Ems is the log of share of employment in service sector to total employment, and φ is marginal effect reflecting the response of gni to a change in employment in service sector.

Results

For unitroot test, the technique of first difference is implemented for data treatment. Data at 1st difference is stationary at 95% for all three popular tests including Levin-Lin-Chu test, Im-Pesaran-Shin test, and Fisher test.

For panel data regression analysis, this study found that an employment in agricultural sector, through pooled OLS, is not statistically related with per capita GNI which the coefficient is -20.7103 (negative relationship). Thus, it means that an increase or decrease in a share of labor in agriculture cannot explain economic growth. Additionally, an employment in service sector, through pooled OLS, is not statistically related with per capita GNI which the coefficient is -115.8163 (negative relationship). So, an increase or decrease in employment in service sector does not effectively affected the economy. However, among the controversy of result, it is found that an employment in industrial sector, under FE, is statistically related with per capita GNI. An increase in the share of labor in industrial sector by 1 percent can generate an increase in per capita GNI by US\$401.3512 and vice versa.

Conclusion and Critique

An employment in industrial sector is likely to be the only factor among three other factors in explaining economic growth. However, when econometric result is not significant, it does not means that the results cannot be used. There may be many reasons behind them. The problem may be about the treatment that researcher used. First difference model becomes the popular technique because it makes the data stationary for almost all case. However, you have to understand the result from first difference model as well. Even though

it can explain the relationship between two variables but those relationship is the relationship between "a change" of first variable and "a change" of second variable. Right?

For policy recommendations, there are many ways to promote manufacturing and industrial market. First of all, the return to labor in this sector should be relatively higher. Wage should be guaranteed by laws. Secondly, other welfare programs should be added. However, almost all countries in this study are already welfare state which fully protects their labor. Thirdly, government should set the national plan or agenda aimed at training labor to be more productive for new innovation. Multitasking labors should be promoted to national priority. And lastly, labors should be encouraged to save and invest in appropriate asset to sustain their income and generation.

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